

WHAT IS CLAIMED IS:

A 1. A transmitting method of digital data for retaining digital data in sectors each comprising a plurality of sync frames and sequentially transmitting ^{the data} ~~it~~, wherein

said sync frame comprises a sync signal and a run length limited code which corresponds to said digital data and satisfies limitations of a minimum run length and a maximum run length, and

said sync signal includes a sync pattern comprised of a bit pattern of a run length which is longer than said maximum run length by 3T and addition bit patterns which are arranged before and after said bit pattern and each of which has a run length that is longer than said minimum run length.

2. A method according to claim 1, wherein among said addition bit patterns, the addition bit pattern arranged after said bit pattern has a fixed length.

3. A method according to claim 1, wherein

PT said run length limited code is a code obtained by 8-16 modulating said digital data every eight bits so as to satisfy run length limitations of the minimum run length is 2 and the maximum run length is 10, and

said sync pattern is comprised of bit patterns of run lengths of (4T or more - 14T - 4T).

A 4. A transmitting method of digital data for retaining the digital data in sectors each comprising a plurality of sync frames and sequentially transmitting ^{the data} ~~it~~, wherein

said sync frame comprises a sync signal and a run length limited code which corresponds to said digital data and satisfies limitations of a minimum run length and a maximum run length, and

said sync signal includes a specific code indicative of a position in said sector.

5. A method according to claim 4, wherein

said sector comprises a plurality of lines each of which is constituted by said two sync frames, and

a position in said sector is identified by said specific code included in each of said two sync signals included every said line.

6. A method according to claim 5, wherein either one of said two sync signals included every said line is cyclically repeated with an increase in number of said lines, based on said specific code included in said sync signal.

7. A method according to claim 4, wherein said specific code in said sync signal arranged at a head of a first line of said sector has a bit pattern in which an inter-code distance for said sync signal arranged at the head of the other line becomes maximum.

8. A method according to claim 3, wherein a DC control can be performed by the bit patterns of said specific code.

9. A method according to claim 8, wherein two kinds of codes having different numbers of inverting times when

they are NRZI modulated can be selected as said specific code, thereby performing said DC control.

10. A method according to claim 5, wherein

said sector comprises 13 lines each of which is constituted by said two sync frames, and

said sync signal has 32 kinds of bit patterns in order to satisfy the limitations of said minimum run length and said maximum run length, specify the head of said sector and each line, and perform said DC control in a connection with said run length limited code existing just before said sync signal.

11. A method according to claim 7, wherein

said sector comprises 13 lines each of which is constituted by said two sync frames, and

said sync signal has 32 kinds of bit patterns in order to satisfy the limitations of said minimum run length and said maximum run length, specify the head of said sector and each line, and perform said DC control in a connection with said run length limited code existing just before said sync signal.

12. A method according to claim 8, wherein

said sector comprises 13 lines each of which is constituted by said two sync frames, and

said sync signal has 32 kinds of bit patterns in order to satisfy the limitations of said minimum run length and said maximum run length, specify the head of said sector and each line, and perform said DC control in

a connection with said run length limited code existing just before said sync signal.

13. A transmitting method of digital data for retaining digital data in sectors each comprising a plurality of sync frames and sequentially transmitting, wherein

said sync frame comprises a sync signal of 32 bits and a run length limited code obtained by 8-16 modulating said digital data every eight bits so as to satisfy run length limitations of a minimum run length is 2 and a maximum run length is 10, and

said sync signal comprises: a connection bit of three bits arranged so as to satisfy the limitations of said minimum run length is 2 and said maximum run length is 10 in a connection with said run length limited code existing just before said sync signal; a specific code of seven bits which satisfies the limitations of said minimum run length = 2 and said maximum run length = 10 and which has 32 kinds of bit patterns; and sync patterns of run lengths of (4T or more - 14T - 4T).

14. A method according to claim 13, wherein said sync signal has 32 kinds of bit patterns shown in the following Table 1 and Table 2, and an arrangement of said sync signals in each line of said sector is set to an arrangement shown in the following Table 3:

Table 1

SY0	0001001001	000100 0000000000010001	0001001000	000100 0000000000010001
SY1	0000010000	000100 0000000000010001	0000010001	000100 0000000000010001
SY2	0001000000	000100 0000000000010001	0001000001	000100 0000000000010001
SY3	0000100000	000100 0000000000010001	0000100001	000100 0000000000010001
SY4	0010000000	000100 0000000000010001	0010000001	000100 0000000000010001
SY5	0010001001	000100 0000000000010001	0010001000	000100 0000000000010001
SY6	0010010010	000100 0000000000010001	0010000010	000100 0000000000010001
SY7	0010010001	000100 0000000000010001	0010010000	000100 0000000000010001

Table 2

SY0	1001001000	000100 0000000000010001	1001001001	000100 0000000000010001
SY1	1000010001	000100 0000000000010001	1000010000	000100 0000000000010001
SY2	1001000001	000100 0000000000010001	1001000000	000100 0000000000010001
SY3	1000001001	000100 0000000000010001	1000001000	000100 0000000000010001
SY4	1000100001	000100 0000000000010001	1000100000	000100 0000000000010001
SY5	1000100100	000100 0000000000010001	1000000100	000100 0000000000010001
SY6	1001000010	000100 0000000000010001	1000000001	000100 0000000000010001
SY7	1000100010	000100 0000000000010001	1000000010	000100 0000000000010001

Table 3

	32bits	1456bits	32bits	1456bits
1st LINE	SYNC SIGNAL SY0	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY5	LUN LENGTH LIMITED CODE
2nd LINE	SYNC SIGNAL SY1	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY5	LUN LENGTH LIMITED CODE
3rd LINE	SYNC SIGNAL SY2	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY5	LUN LENGTH LIMITED CODE
4th LINE	SYNC SIGNAL SY3	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY5	LUN LENGTH LIMITED CODE
5th LINE	SYNC SIGNAL SY4	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY5	LUN LENGTH LIMITED CODE
6th LINE	SYNC SIGNAL SY1	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY6	LUN LENGTH LIMITED CODE
7th LINE	SYNC SIGNAL SY2	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY6	LUN LENGTH LIMITED CODE
8th LINE	SYNC SIGNAL SY3	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY6	LUN LENGTH LIMITED CODE
9th LINE	SYNC SIGNAL SY4	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY6	LUN LENGTH LIMITED CODE
10th LINE	SYNC SIGNAL SY1	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY7	LUN LENGTH LIMITED CODE
11th LINE	SYNC SIGNAL SY2	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY7	LUN LENGTH LIMITED CODE
12th LINE	SYNC SIGNAL SY3	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY7	LUN LENGTH LIMITED CODE
13th LINE	SYNC SIGNAL SY4	LUN LENGTH LIMITED CODE	SYNC SIGNAL SY7	LUN LENGTH LIMITED CODE
	FRONT SYNC FRAME		REAR SYNC FRAME	